

CLEAN VERSION OF AMENDED CLAIMS

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G
24. (six times amended) A semiconductor package comprising:

a substrate comprising a first surface, a second surface, a plurality of conductors on the first surface, and a bonding opening from the first surface to the second surface;

a semiconductor die having a first outline and a face on the bonding opening bonded directly to the second surface;

a first mask on the first surface;

a second mask covering the second surface except in a die attach area defined by an opening through the second mask having a second outline corresponding to the first outline;

an adhesive layer between the face and the die attach area bonding the die to the substrate;

a plurality of wires in the bonding opening wire bonded to the die and in electrical communication with the conductors; and

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an encapsulating resin on the die and on the second mask.

G2
27. (six times amended) A semiconductor package comprising:

a substrate comprising a first surface, a second surface, a plurality of conductors on the first surface, a plurality of wire bonding pads on the first surface in electrical communication with the conductors, and a bonding opening from the first surface to the second surface;

a semiconductor die having a first outline and a face on the bonding opening bonded to the second surface;

a first mask on the first surface;

a second mask on the second surface comprising a second opening having a second outline corresponding to the

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first outline defining an open die attach area on the second surface;

a filled adhesive layer between the face and the die attach area bonding the die to the substrate and configured to transfer heat directly from the face to the substrate;

a plurality of wires in the bonding opening wire bonded to the die and to the wire bonding pads; and

an encapsulating resin on the die and on the second mask.

G3
30. (six times amended) A semiconductor package comprising:

a substrate having a first surface, a second surface and a bonding opening there through;

a plurality of conductors on the first surface having a plurality of wire bonding pads;

a first mask on the first surface at least partially covering the conductors;

a second mask on the second surface except in a die attach area defined by an opening in the second mask;

a semiconductor die on the die attach area having a face aligned with the bonding opening attached to the second surface;

a filled adhesive layer attaching the face to the die attach area and configured to transfer heat directly from the face to the substrate;

a plurality of wires in the bonding opening bonded to the die and to the wire bonding pads; and

an encapsulating resin on the second mask encapsulating the die.

G4
34. (five times amended) A semiconductor package comprising:

a substrate comprising a first surface, an opposing second surface and a wire bonding opening from the first surface to the second surface;

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G4*

a plurality of conductors on the first surface comprising wire bonding pads;

a first mask on the first surface;

a semiconductor die aligned with the wire bonding opening and bonded face down to the second surface, the die having a first outline;

a second mask substantially covering the second surface and including an opening there through having a second outline corresponding to but only slightly larger than the first outline defining a die attach area on the second surface;

an adhesive layer between the die and the die attach area bonding the die to the substrate;

a plurality of wires in the wire bonding opening bonded to the die and to the wire bonding pads; and

an encapsulating resin on the second mask encapsulating the die.

CLEAN VERSION OF ALL PENDING CLAIMS

24. (six times amended) A semiconductor package comprising:

a substrate comprising a first surface, a second surface, a plurality of conductors on the first surface, and a bonding opening from the first surface to the second surface;

a semiconductor die having a first outline and a face on the bonding opening bonded directly to the second surface;

a first mask on the first surface;

a second mask covering the second surface except in a die attach area defined by an opening through the second mask having a second outline corresponding to the first outline;

an adhesive layer between the face and the die attach area bonding the die to the substrate;

a plurality of wires in the bonding opening wire bonded to the die and in electrical communication with the conductors; and

an encapsulating resin on the die and on the second mask.

25. (four times amended) The package of claim 24 wherein the encapsulating resin comprises epoxy.

26. (four times amended) The package of claim 25 wherein the adhesive layer comprises a filled adhesive configured to transfer heat directly from the face to the second surface.

27. (six times amended) A semiconductor package comprising:

a substrate comprising a first surface, a second surface, a plurality of conductors on the first surface, a

plurality of wire bonding pads on the first surface in electrical communication with the conductors, and a bonding opening from the first surface to the second surface;

a semiconductor die having a first outline and a face on the bonding opening bonded to the second surface;

a first mask on the first surface;

a second mask on the second surface comprising a second opening having a second outline corresponding to the first outline defining an open die attach area on the second surface;

a filled adhesive layer between the face and the die attach area bonding the die to the substrate and configured to transfer heat directly from the face to the substrate;

a plurality of wires in the bonding opening wire bonded to the die and to the wire bonding pads; and

an encapsulating resin on the die and on the second mask.

28. (thrice amended) The package of claim 27 further comprising a glob top in the bonding opening and on the first surface at least partially encapsulating the wires.

29. (thrice amended) The package of claim 27 wherein the first mask and the second mask comprise a photoimageable material.

30. (six times amended) A semiconductor package comprising:

a substrate having a first surface, a second surface and a bonding opening there through;

a plurality of conductors on the first surface having a plurality of wire bonding pads;

a first mask on the first surface at least partially covering the conductors;

a second mask on the second surface except in a die attach area defined by an opening in the second mask;

a semiconductor die on the die attach area having a face aligned with the bonding opening attached to the second surface;

a filled adhesive layer attaching the face to the die attach area and configured to transfer heat directly from the face to the substrate;

a plurality of wires in the bonding opening bonded to the die and to the wire bonding pads; and

an encapsulating resin on the second mask encapsulating the die.

31. (four times amended) The package of claim 30 wherein the encapsulating resin comprises epoxy.

32. (four times amended) The package of claim 30 further comprising a polymer in the bonding opening and on the first surface at least partially encapsulating the wires.

33. (four times amended) The package of claim 30 wherein the adhesive layer comprises a filled epoxy.

34. (five times amended) A semiconductor package comprising:

a substrate comprising a first surface, an opposing second surface and a wire bonding opening from the first surface to the second surface;

a plurality of conductors on the first surface comprising wire bonding pads;

a first mask on the first surface;

a semiconductor die aligned with the wire bonding opening and bonded face down to the second surface, the die having a first outline;

a second mask substantially covering the second surface and including an opening there through having a second outline corresponding to but only slightly larger

than the first outline defining a die attach area on the second surface;

an adhesive layer between the die and the die attach area bonding the die to the substrate;

a plurality of wires in the wire bonding opening bonded to the die and to the wire bonding pads; and

an encapsulating resin on the second mask encapsulating the die.

35. (thrice amended) The package of claim 34 further comprising a glob top in the wire bonding opening at least partially encapsulating the wires.

36. (four times amended) The package of claim 34 wherein the adhesive layer comprises a filled epoxy configured to transfer heat directly from the face to the substrate.